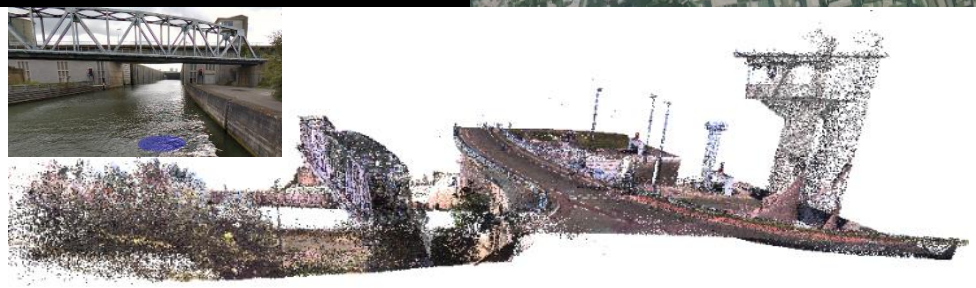
Image Archiving and Processing Chain GDI-Flanders, catalyzing innovation in operations

Beeldverwerkingsketen (BVK)

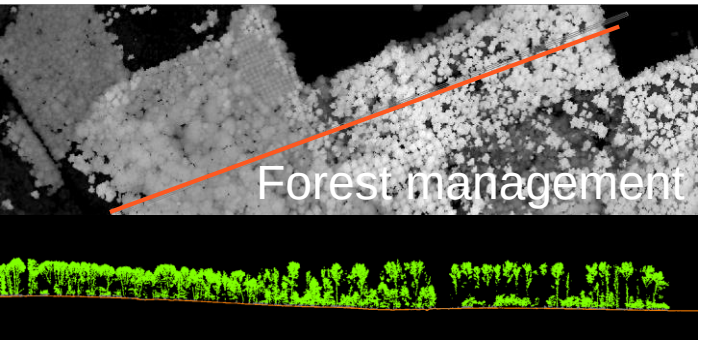
Remote sensing resources

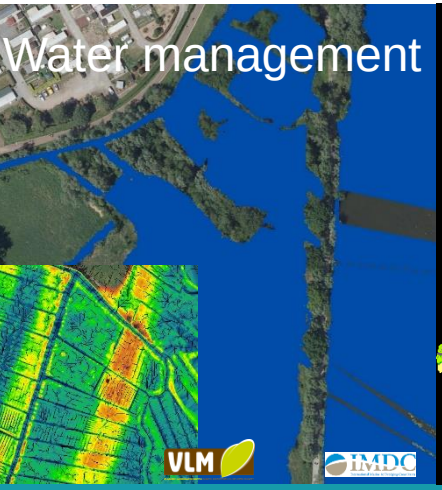
- Increasing availability of new platform/sensor combinations
- Growing interest for integration of RS data in an operational setting for monitoring on a local to regional scale

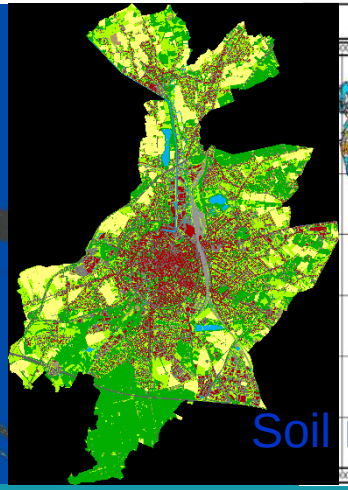


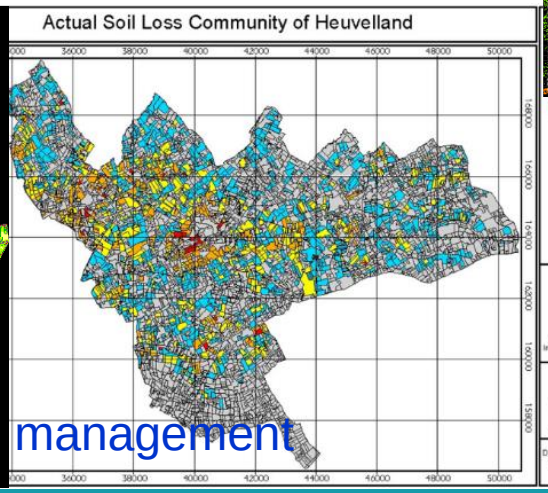
Remote sensing in operations

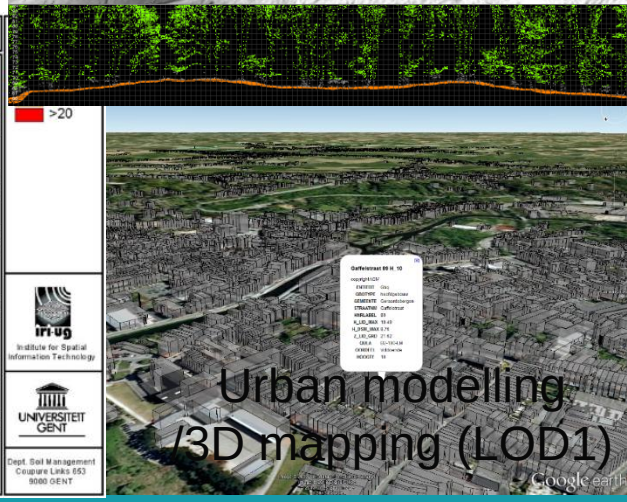
- Object recognition/extraction
- Modelling/monitoring
- …..











Remote sensing in operations

Comes with some challenges :

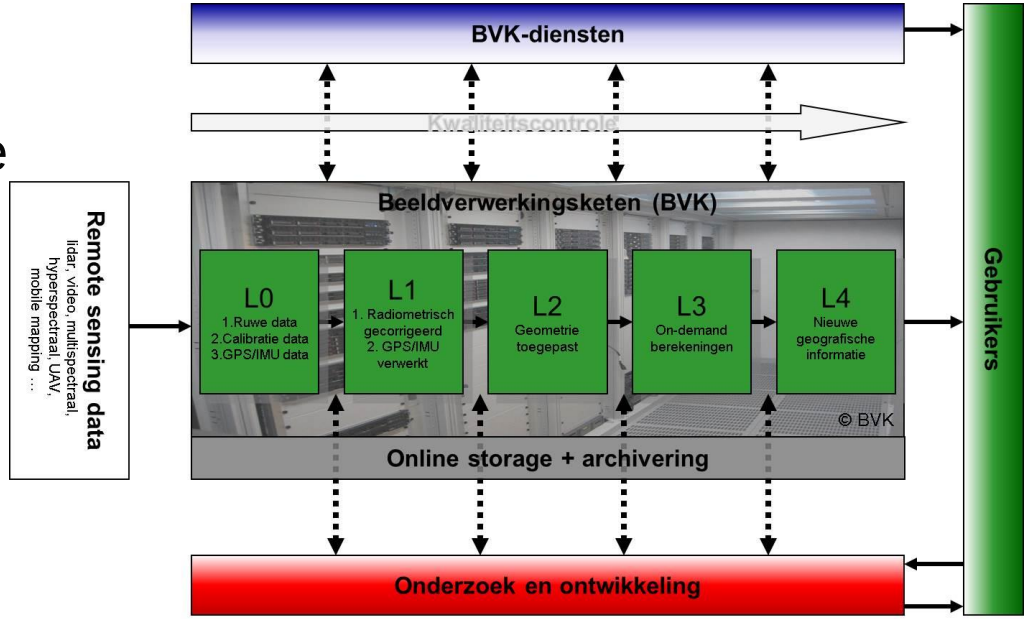
- Automated processing of ever increasing data volumes
- Keep up automatisation with innovation
  - Research for new processing algorithms
  - Functional testing of new processing algorithms in operational setting
  - Functional testing of new sensors in an operational setting
- Keep up demand driven added-value applications with innovation
- Need for framework & coöperation to facilitate such an innovation driven integration of remote sensing data for operational purposes

Remote sensing in operations

Building a facilitating framework : BeeldVerwerkingsKeten (BVK)

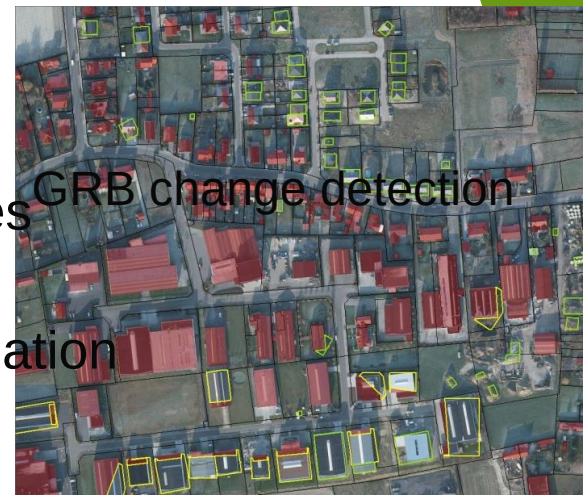
- Coöperation : AGIV & VITO/TAP (signed by Gov. of Flanders)

- Encompassing :
  - Hard/software system solutions
  - Central safe online storage
  - Managed offline archiving
  - Integration of AGIV GEOSecure
  - Algorithmical workflows
  - User applications
  - Data hosting services
  - OGC services

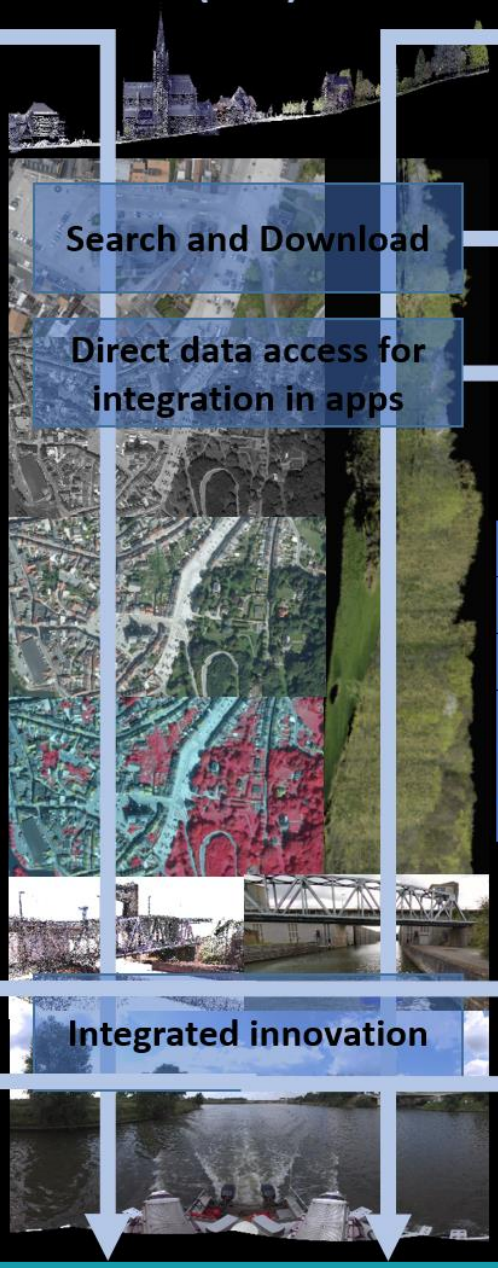


Remote sensing in operations

- Enabling :
  - Distribution of RS data to GDI-Flanders/third parties
  - Fully automated processing
  - On demand production & distribution of geo information
- Goal:
  - Further develop and exploit the BVK
  - Fully implement the ability of the BVK as catalyzer for :
    - Research
    - Interagency coöperation
    - Coöperation with value-added providers



Integrated image archiving and processing system (BVK)



Our raw remote sensing data
(with terms of use)

Your raw remote sensing data
(with terms of use)

Search and Download → Remote sensing Dataportal

Direct data access for integration in apps → Data hosting services

DTM/DSM/slope
Change detection
Orthofotos
Data transformations

Inundation modelling
Run off
Solar energy potential
Soil sealing
Landscape modelling
...

Our on the fly data processing ⇄ Integrated innovation ⇄ Your/on-demand data processing

Browser app (view/measure)
Easy data downloader app

Our new apps

Your new apps

laptop/desktop apps (view/measure)
Android app smartphone/tablet

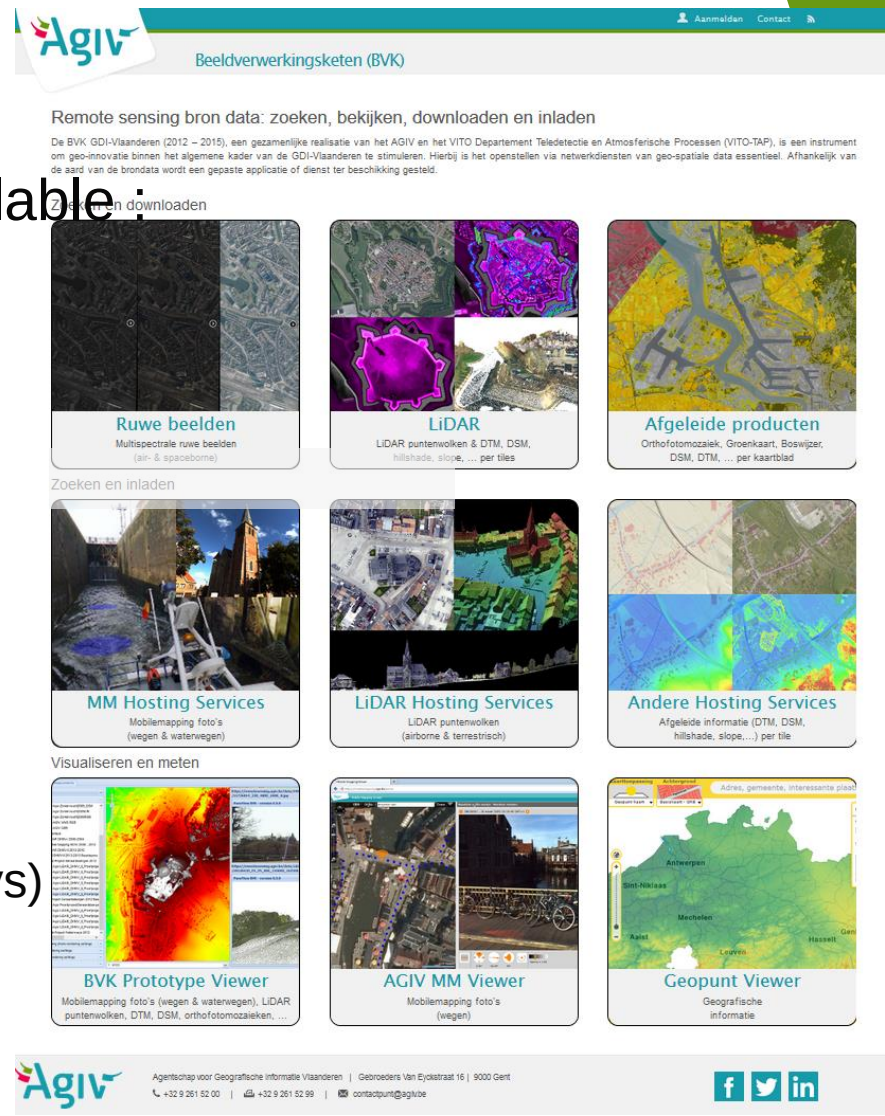
BVK – Search and Download

BVK – Remote Sensing Portal

- Central distribution point for all available :
  - Remote sensing resources
  - Applications
  - Technical guidelines

- Available resources (11/2014) :
  - Multispectral (20 – 40 cm) aerial images
  - Multispectral (8 – 10 cm) aerial images
  - Aerial LiDAR pointclouds (2000 – 2014)
  - Panoramic images (waterways/roads)
  - Terrestrial LiDAR pointclouds (waterways)
  - …

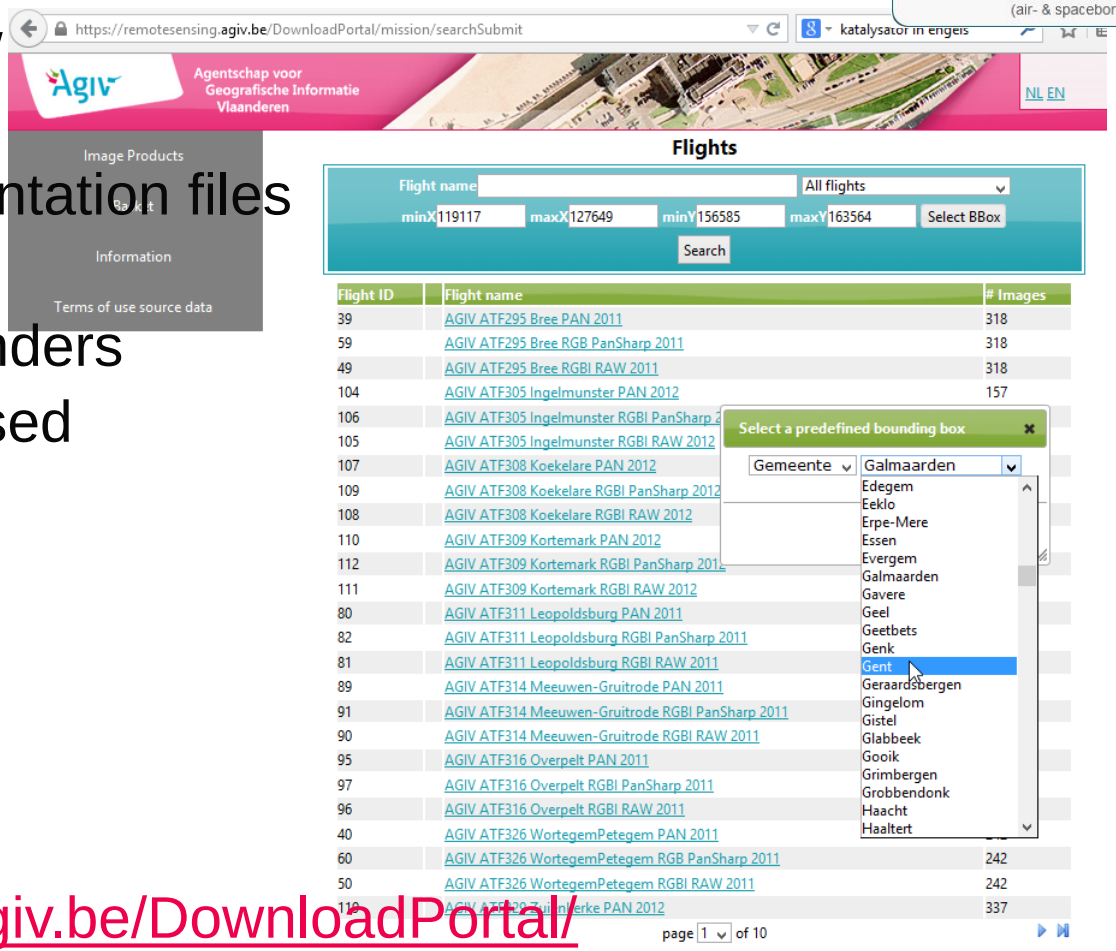
https://remotesensing.agiv.be/



BVK – Search and Download

BVK – Remote Sensing Download Portal

- Bulk download of raw multispectral images and their exterior orientation files
- Members of GDI-Flanders automatically authorised

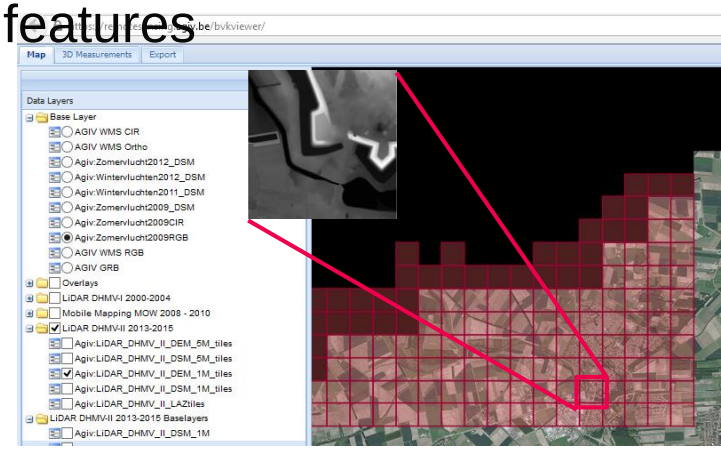


https://remotesensing.agiv.be/DownloadPortal/

BVK – Direct data access for integration

BVK – Data Hosting Services

- For bulk download of raw & processed data
- For integration of the data into your own applications
  - WMS request the LiDAR tiles as a bitmap
    - get map/get feature info
  - WFS request get underlying attributes of the features
    - DescribeFeatureType
  - Consumers of the WFS
    - Pick up those attributes
    - Perform a HTTP GET/POST to get the data
    - URL : https://remotesensing.agiv.be/data/LiDAR_DHMV_2/P3/ATL12306/DTM_01/DHMV_2_Kb06_127500_218500_DTM_1m.tif



BVK – Integrated innovation

BVK - DataDownloadapplication

- For bulk download of raw & processed data
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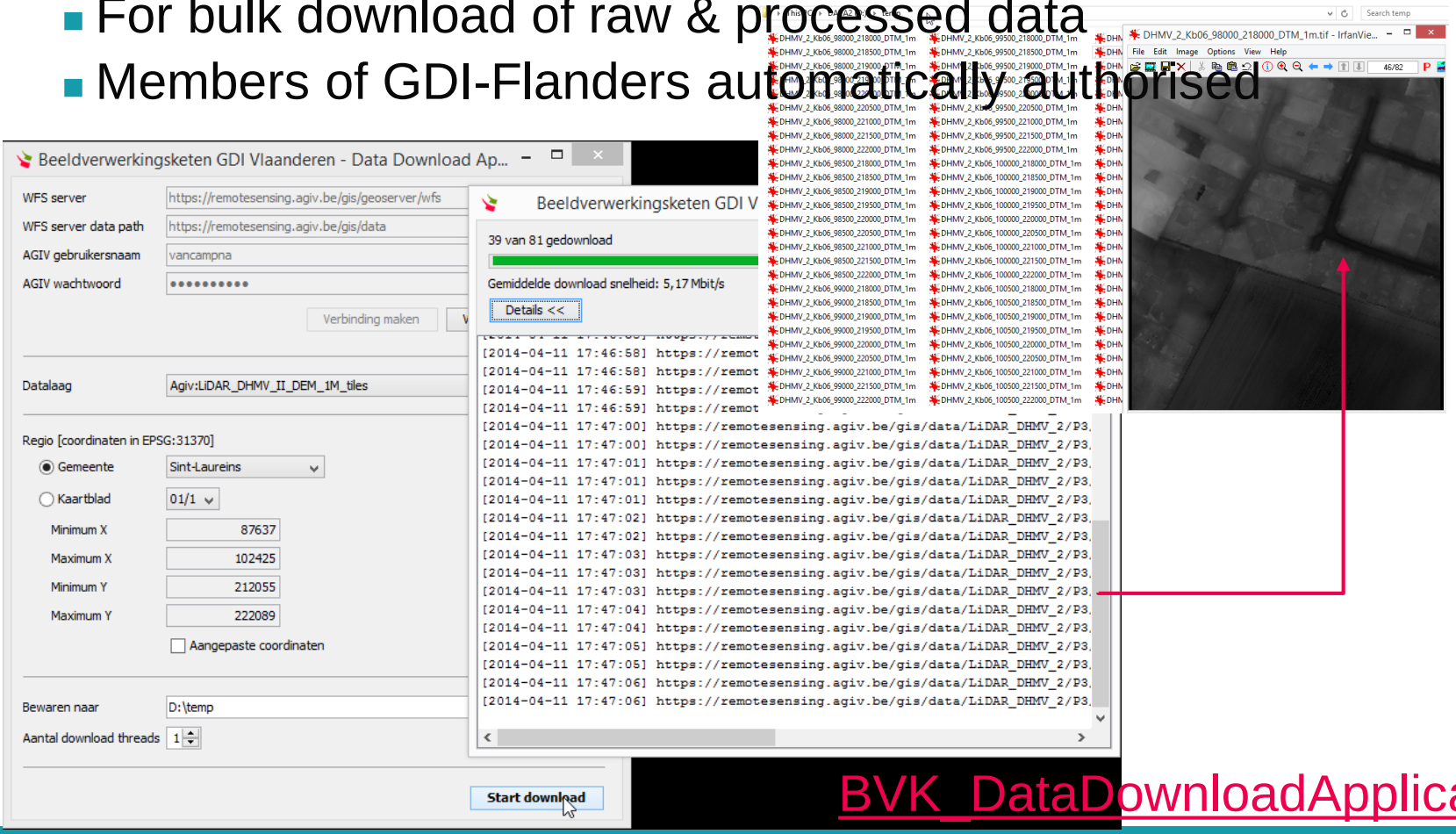
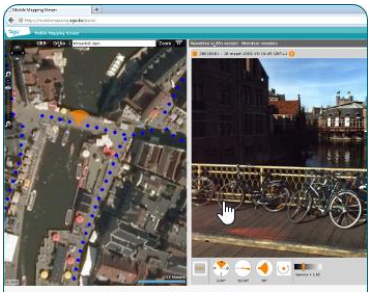


Download
DTM tiles
DSM tiles
LAZ files
…

BVK_DataDownloadApplicationv2.1

BVK – Integrated innovation

Visualiseren en meten



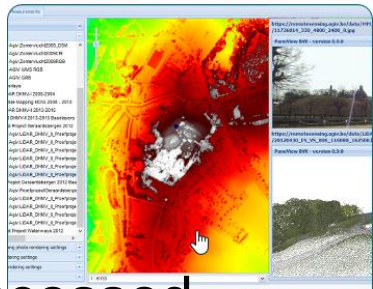
AGIV MM Viewer

Mobilemapping foto's (wegen)

BVK – application hosting

- Panoramic/3D viewing of data remotely accessed
- Measuring in the remotely accessed data
- Prototyping new visualisation developments
- Selecting/download data tiles (not for bulk download !)

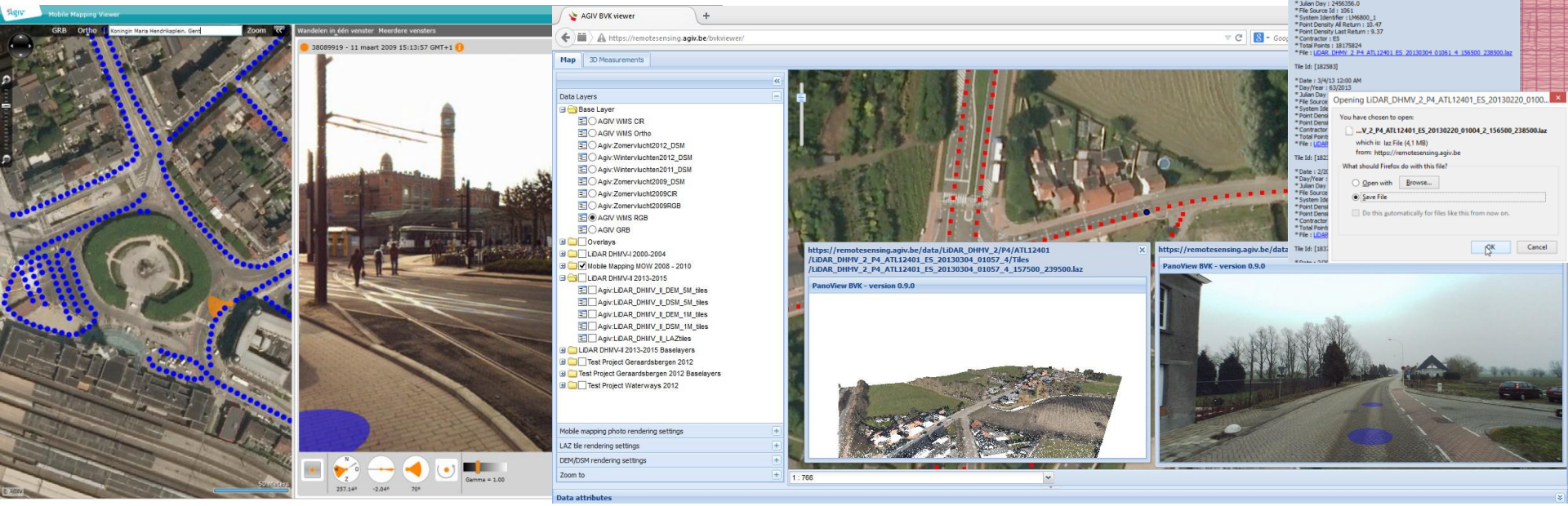
Visualiseren en meten



BVK Prototype Viewer

Mobilemapping foto's (wegen & waterwegen), LiDAR puntenwolken, DTM, DSM, orthofotomozaieken, ...

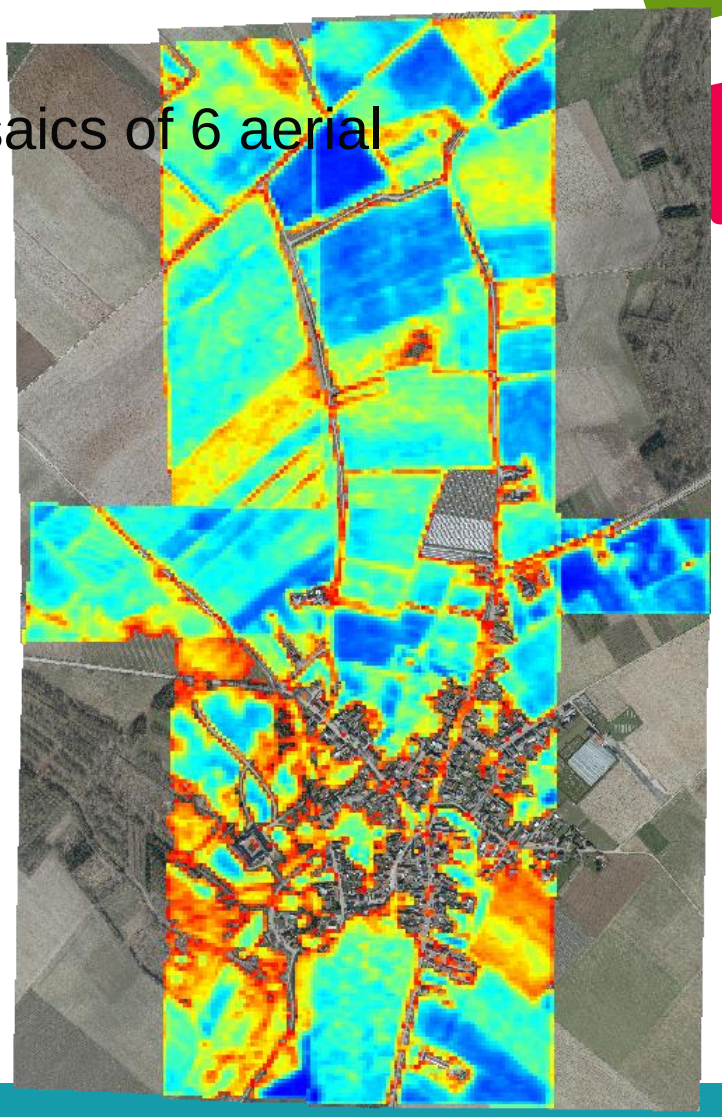
https://remotesensing.agiv.be/bvkviewer/



BVK – Integrated innovation

BVK – Processing workflow : seamless mosaics

- automatic graph-cut based seamless mosaics of 6 aerial images (10cm resolution)



BVK – Integrated innovation

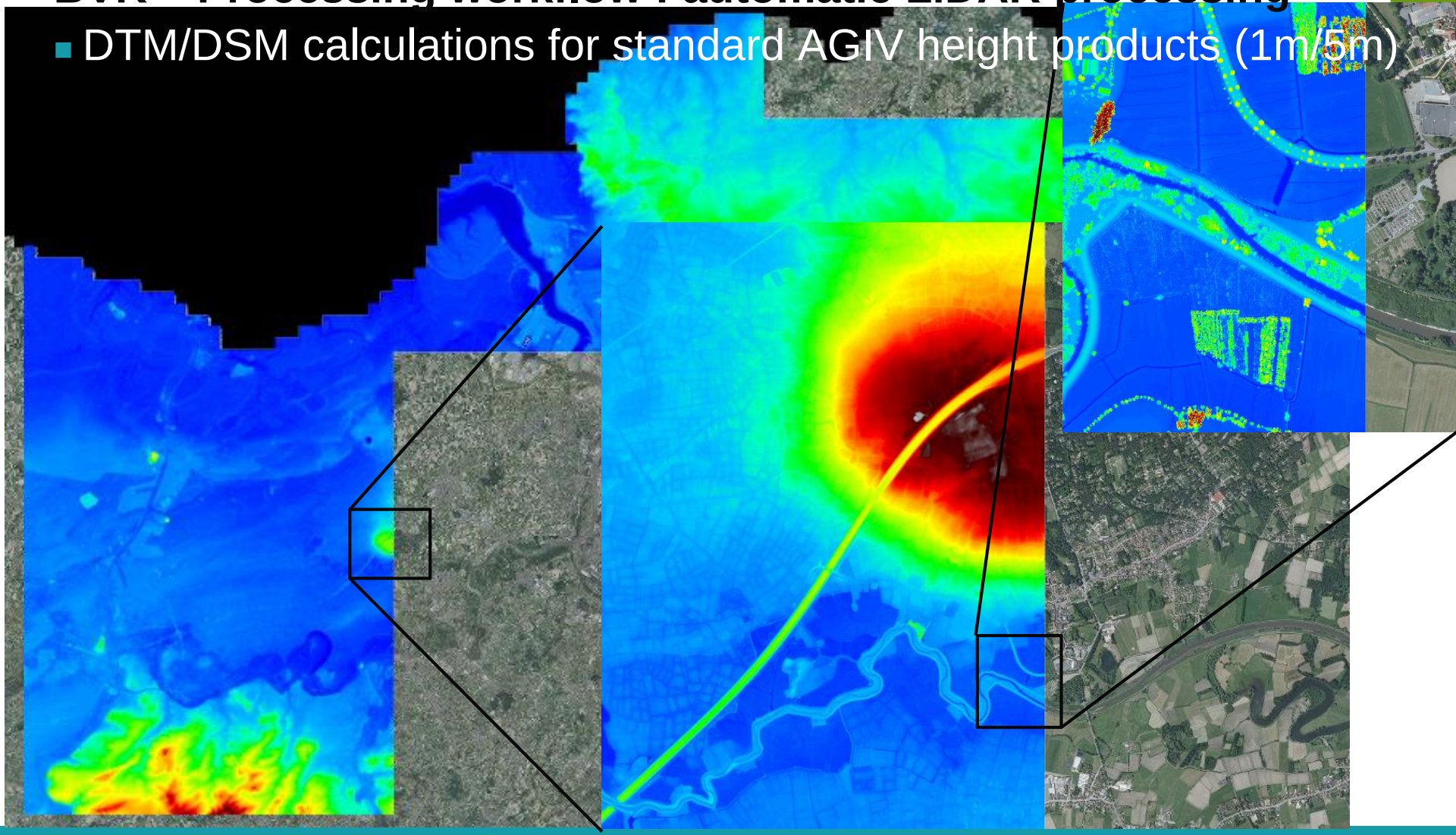
BVK – Processing workflow : automatic change detection

segmentation and rule-based classification for AGIV-GRB change detection

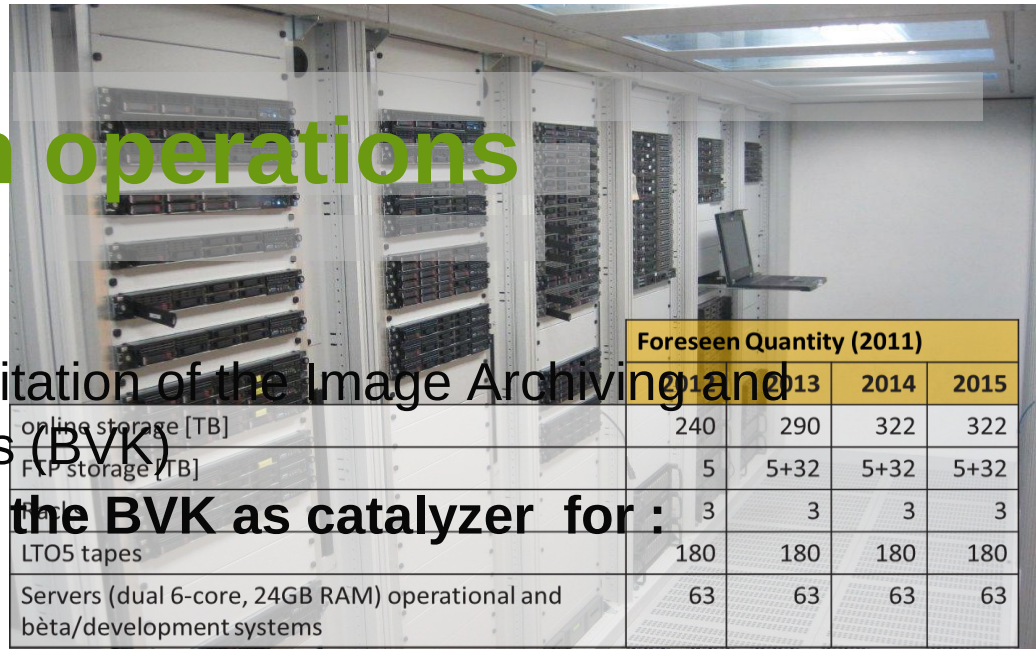
BVK – Integrated innovation

BVK – Processing workflow : automatic LiDAR processing

- DTM/DSM calculations for standard AGIV height products (1m/5m)



Remote sensing in operations



	Foreseen Quantity (2011)			
	2012	2013	2014	2015
online storage [TB]	240	290	322	322
FTP storage [TB]	5	5+32	5+32	5+32
Back	3	3	3	3
LTO5 tapes	180	180	180	180
Servers (dual 6-core, 24GB RAM) operational and bèta/development systems	63	63	63	63

- **Goal:**
  - Further development and exploitation of the Image Archiving and Processing Chain GDI-Flanders (BVK)
  - **Fully implement the ability of the BVK as catalyzer for :**
    - Research
    - Interagency coöperation
    - Coöperation with value-added providers

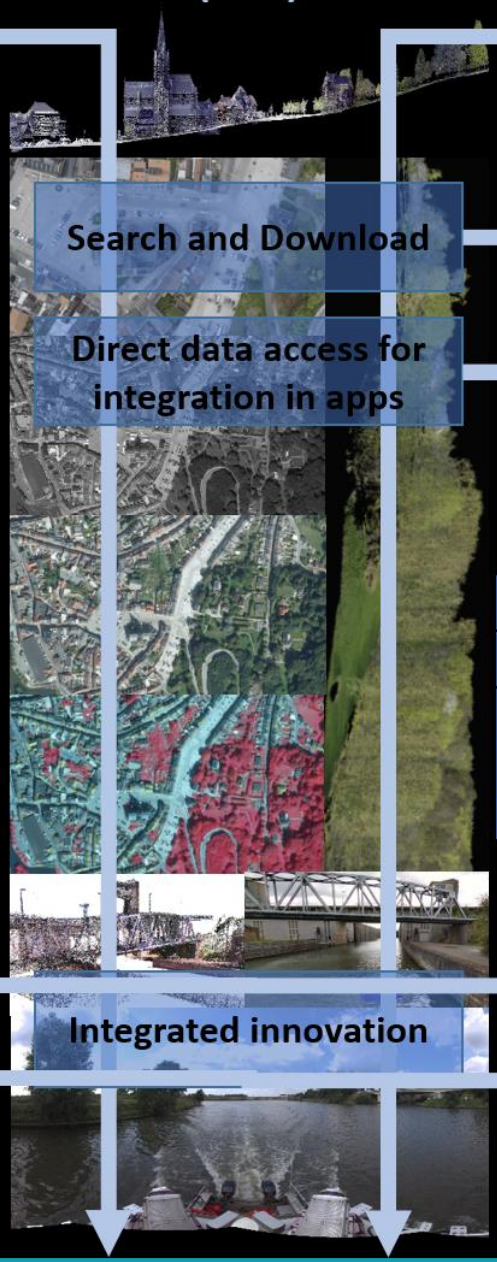
→Central, safe storage and availability of remote sensing data that is of interest to many partners

→Interpartner driven product improvement based on combining those data

→Interpartner driven development of dedicated workflows

→Interpartner driven development of dedicated services

Integrated image archiving and processing system (BVK)



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Data query services

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Urban flood simulations
All terrain DTM
Dike mapping/monitoring
3D reconstructions
…

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Contact :
Jo.vanvalckenborgh@AGIV.be
Tanja.vanachteren@VITO.be
Nancy.vancamp@AGIV.be
Jan.biesemans@VITO.be

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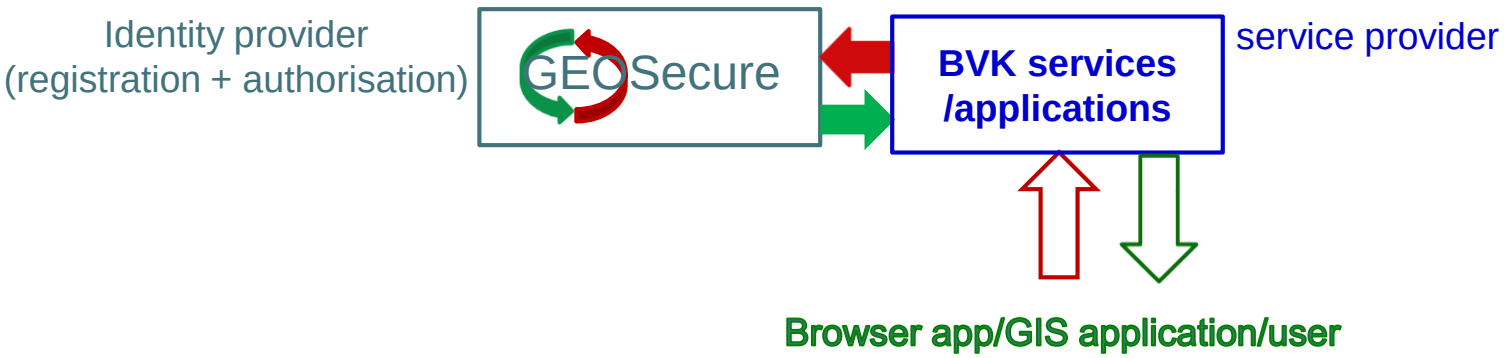
- Aquisition of RS resource data follows the terms of use that accompany each resource. Those terms are being imposed through the AGIV security system (GeoSecure).
  - Based on the type of resource
  - Terms of use/ownership (f(time) or f(time;space))
  - User profiles